

Application Number: 09/925,436

Amdt. Dated 25 June 2003

Reply to Office action of 02/26/2003

Remarks General

By the above amendment, Applicant has rewritten claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over prior art.

Claim Rejections 35 USC 112

Claim 1 is canceled and replaced with new claim 17. Claim 17 text is changed to distinctly claim "an occupant in the vehicle" and "An armored system for use in a vehicle comprising..." distinctly claims the subject matter.

Claim Rejections 35 USC 102

Applicant requests reconsideration and withdrawal of this objection since prior art has major physical, structural, functional, and operational differences and in addition to different components that are not suggested by Boyce (3,278,230), or other patents provided.

The current state-of-the-art for protecting personnel in unarmored vehicles from high velocity ballistic threats is placing the entire crew compartment in armor, which creates a burden of thousands of pounds of armor weight and tens of thousands of dollars. The problem's focus is to increase the survivability of unarmored vehicle occupants from high velocity projectiles such as shrapnel or bullets at a minimum weight burden on the vehicle and occupants. To defeat high velocity threats, approximately eight to twelve pounds per square foot of armor material is required. Light material such as plastics or fabrics or soft materials are not functional against these threats especially armor piercing bullets. To provide reasonable torso coverage in a vehicle where threats are typically from 360 degrees, five to six square feet of armor may be needed. This equates to an armor system weighting 40 to 72 pounds. The problem to be solved is how to configure a system that allows for mobility in and

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outside of the vehicle under direct fire threats, yet provide maximum vital area coverage with heavy ballistic armors. No restraint system is required to protect from ballistic threats because bullets do not radically affect vehicle motion, but rather pass through the vehicle depending on what the bullet hits inside.

Boyce states "This invention relates to a unit for use in restraint systems for astronauts and crewmen of space capsules or high performance aircraft..." (Column 1 line 10). Boyce teaches that "it is the object of this invention, therefore, to provide a light torso shell fitted to a crewman and lined with a soft resilient material which can be rigidized when occasion demands and which provides comfort when restraint system is relaxed" (Column 1, line 28). Boyce further states that "shells are utilized in order to reduce distortion of the body of the astronaut under acceleration and provides a single point of attachment for retraction of the limbs into leg and arm rests (Column 2, line 65). Further, Boyce states, "The two halves of the torso shell are held together by latches and shoulder straps as illustrated in figures 3 and 4. In addition, Boyce has a total of three claims, in which the two independent claims state "a personnel restraint system" (Column 4, line 23).

Unrecognized Problem by Boyce The problem solved by applicant's invention was never before recognized. The recognition of an unrecognized problem militates in favor of patentability. Boyce clearly does not recognize the high velocity bullet problem faced by unarmored vehicles, especially ground vehicles. He does not suggest using "armor" or "ballistic plates" or the creation of an "armored system", and nor does he address the need to protect against bullets or ballistic threats.

Boyce Solves a Different Problem Applicant's invention solves a different problem than the referenced and such different problem is recited in the claims. Boyce solves a restraint problem in aircraft due to accelerations and motion. Boyce's system focuses on horizontal and vertical forces induced by aircraft motion thereby causing

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rapid accelerations and decelerations. He clearly states numerous times his invention is solving a restraint problem.

Boyce does not solve the "armored system weight on vehicle occupant" problem. He does not suggest the transfer of large amounts of ballistic plate weight (40 to 70 pounds) from the occupant to the seat. Nor does he introduce in the specifications, drawings or claims concerning the system's weight problems. This is most likely because he uses light weight plastics to constrain a person under extreme vehicle motions and these lightweight plastics are not a burden on the torso. In addition, Boyce's latching system is not designed nor anticipated to transfer front ballistic plate or side ballistic plate vertical loads or weight to the back plate.

Unsuggested Modification The prior art lacks any suggestion that the referenced should be modified in a manner required to meet the claims. The introduction or use of an armored system and ballistic threats into Boyce's invention is not suggested anywhere in Boyce. An armored system approach would not be reasonable under Boyce's invention, since the introduction of 40 to 70 pounds of armor surrounding an astronaut or pilot would have signification acceleration and decelerations design problems. The front plate weighing up to 30 pounds, could introduce severe weights under acceleration if horizontal load transfer mechanisms are not in place. Similarly in rapid decelerations, the entire system may pull a pilot or astronaut forward, overwhelming Boyce's restraint design.

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Prior art individually, or in combination, does not make an invention obvious nor does it achieve the functionality provided by Applicant's invention. Applicant's invention provides a proven approach for transferring heavy armor systems off of the vehicle occupant and transferring the weight to the seat.

Applicant requests reconsideration and withdrawal of this objection since prior art:

- (1) Does not recognize the problem applicant solves (Unrecognized Problem),
- (2) Solves a different problem,
- (3) Requires unsuggested modifications, and
- (4) Requires modifications.

For the above reasons, when compared to prior art, Applicant should overcome the USC 102 rejection.

Conclusion

For the above reasons, applicant submits that the claims are now in proper form, and that the claims all define patentably over prior art. Therefore Applicant submits that this application is now in condition for allowance, which action applicant respectfully requests.

Respectfully,



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